CLAIMS

What is claimed is:

1. A projectile system comprising:

a spherical capsule to be impacted with a target, wherein, upon impact with the target, the capsule ruptures; and

a substance, contained within the capsule, wherein the substance comprises a powder.

2. A projectile system according to Claim 1, wherein, upon impact and rupture of the capsule, the powder substance is dispersed radially on and about the point of impact with the target.

3. A projectile system according to Claim 2, wherein the spherical capsule further comprises a structurally weakening feature selected from the group comprising an exterior surface dimple, an interior surface dimple, an exterior surface scoring and an interior surface scoring.

4. A projectile system according to Claim 3, wherein the structurally weakening feature comprises a least one exterior surface dimple.

5. A projectile system according to Claim 2, wherein the structurally weakening feature comprises at least one exterior surface scoring.

6. A projectile system according to Claim 2, wherein the structurally weakening feature comprises at least one interior surface scoring.

7. A projectile system according to Claim 2, wherein the substance further comprises an inhibiting substance.

8. A projectile system according to Claim 7, wherein the substance comprises at least about 5% inhibiting substance.

9. A projectile system according to Claim 7, wherein the substance comprises at least about 10% inhibiting substance.

10. A projectile system according to Claim 7, wherein the substance comprises at least about 20% inhibiting substance.

11. A projectile system according to Claim 7, wherein the inhibiting substance comprises oleoresin capsicum.

12. A projectile system according to Claim 2, wherein the substance further comprises a marking substance.

13. A projectile system according to Claim 2, wherein the substance further comprises an inert substance.

14. A projectile system according to Claim 2, wherein the substance further comprises a substance selected from the group consisting of an inhibiting substance, a marking substance and an inert substance.

15. A projectile system according to Claim 14, wherein the powdered substance comprises at least two substances selected from the group consisting of an inhibiting substance, a marking substance and an inert substance.

16. A projectile system according to Claim 2, wherein the substance contained within the capsule further comprises a liquid substance.

17. A projectile system according to Claim 2, wherein the substance contained within the capsule further comprises a gas.

18. A projectile system according to Claim 2, wherein the substance contained within the capsule further comprises a solid substance.

19. A projectile system according to Claim 18, wherein the solid substance is selected from the group consisting of nut shells, rice, wood particles, metal particles and metal balls.

20. A projectile system according to Claim 2, wherein the capsule comprises a material selected from the group consisting of acrylic, vinyl, plastic, polystyrene, polypropylene sodium alginate, calcium chloride, coated alginate and polyvinyl alginate.

21. A projectile system according to Claim 2, wherein the capsule has an outer diameter from about 1.0 cm to about 5.0 cm.

22. A projectile system according to Claim 21, wherein the capsule has an outer diameter of about 1.8 cm.

23. A projectile system according to Claim 21, wherein the capsule has an inner diameter from about 0.3 cm to about 5 cm.

24. A projectile system according to Claim 23, wherein the capsule has an inner diameter of about 1.7 cm.

25. A projectile system according to Claim 24, wherein the capsule has an outer diameter of about 1.8 cm.

26. A projectile system comprising:

a capsule to be impacted with a target, wherein, upon impact with the target, the capsule ruptures; and

a substance, contained within the capsule, wherein the substance comprises a powder which powder occupies more than 50% of the space within the capsule.

27. A projectile in accordance with Claim 26, wherein, upon impact and rupture of the capsule, the substance is dispersed radially on and about the point of impact with the target.

28. A projectile in accordance with Claim 27, wherein the substance occupies at least about 60% of the space within the capsule.

29. A projectile in accordance with Claim 28, wherein the substance occupies from about 75% to about 95% of the space within the capsule.

30. A projectile in accordance with Claim 29, wherein the substance occupies about 90% of the space within the capsule.

31. A projectile system according to Claim 27, wherein the spherical capsule further comprises a structurally weakening feature selected from the group comprising an exterior surface dimple, an interior surface dimple, an exterior surface scoring and an interior surface scoring.

32. A projectile system in accordance with Claim 31, wherein the structurally weakening feature comprises a plurality of dimples on the exterior surface of the spherical capsule.

33. A projectile system in accordance with Claim 31, wherein the structurally weakening feature comprises a plurality of dimples on the interior surface of the spherical capsule.

34. A projectile system according to Claim 31, wherein the structurally weakening feature comprises a plurality of scorings on the exterior surface of the spherical capsule.

35. A projectile system according to Claim 31, wherein the structurally weakening feature comprises a plurality of scorings on the interior surface of the spherical capsule.

36. A projectile system according to Claim 26, wherein the substance further comprises an inhibiting substance.

37. A projectile system according to Claim 36, wherein the substance comprises at least about 1% inhibiting substance.

38. A projectile system according to Claim 37, wherein the substance comprises at least about 5% inhibiting substance.

39. A projectile system according to Claim 38, wherein the substance comprises at least about 10% inhibiting substance.

40. A projectile system according to Claim 39, wherein the substance comprises at least about 20% inhibiting substance.

41. A projectile system according to Claim 36, wherein the inhibiting substance comprises oleoresin capsicum.

42. A projectile system according to Claim 26, wherein the substance further comprises a marking substance.

43. A projectile system according to Claim 26, wherein the substance further comprises an inert substance.

44. A projectile system according to Claim 26, wherein the substance further comprises a substance

selected from the group consisting of inhibiting substances, marking substances and inert substances.

45. A projectile system according to Claim 44, wherein the substance comprises at least two substances selected from the group consisting of an inhibiting substance, a marking substance and an inert substance.

46. A projectile system according to Claim 45, wherein the substance comprises at least two inhibiting substances.

47. A projectile system according to Claim 46, wherein the substance comprises oleoresin capsicum and orthochlorobenzal-malononitrile.

48. A projectile system according to Claim 26, wherein the substance contained within the capsule further comprises a liquid substance.

49. A projectile system according to Claim 48, wherein the substances contained in the capsule further comprise a substance selected from the groups consisting of inhibiting substances, marking substances and inert substances.

50. A projectile system according to Claim 49, wherein the substances contained within the capsule comprise at least two inhibiting substances.

51. A projectile system according to Claim 26, wherein the substance contained within the capsule further comprises a gas.

52. A projectile system according to Claim 26, wherein the substance contained within the capsule further comprises a solid substance.

53. A projectile system according to Claim 52, wherein the solid substance is selected from the group consisting of nut shells, rice, wood particles, metal particles, metal balls, rubber and plastic.

54. A projectile system according to Claim 26, wherein the capsule comprises a material selected from the group consisting of acrylic, vinyl, plastic, polypropylene, polystyrene, sodium alginate, calcium chloride, coated alginate and polyvinyl alginate.

55. A projectile system according to Claim 26, wherein the capsule has an outer diameter from about 1.0 cm to about 5.0 cm.

56. A projectile system according to Claim 55, wherein the capsule has an outer diameter of about 1.8 cm.

57. A projectile system according to Claim 55, wherein the capsule has an inner diameter from about 0.3 cm to about 5 cm.

58. A projectile system according to Claim 57, wherein the capsule has an inner diameter of about 1.7 cm.

59. A projectile system according to Claim 58, wherein the capsule has an outer diameter of about 1.8 cm.

60. A projectile system comprising:

a spherical capsule to be impacted with a target, wherein, upon impact with the target, the capsule ruptures; and

a powdered substance, contained within the capsule, wherein the powdered substance comprises oleoresin capsicum and wherein the powdered substance occupies more than 50% and less than 100% of the space within the capsule.

61. A projectile system according to Claim 60, wherein the powdered substance occupies about 90% of the space within the capsule.

62. A method of assembling a projectile system comprising a capsule containing a powdered substance occupying more than 50% of the space within the capsule, the capsule comprising two about equal halves, the method comprising the steps of:

a) placing into each half of the capsule a portion of the powdered substance, such that all of the powdered substance is in both halves of the capsule;

b) placing a membrane into each half of the capsule such that the substance contained therein is retained within the capsule by the membrane; and

c) sealingly attaching the capsule halves to one another such that the substance is contained therein.

63. The method according to Claim 62, wherein about half of the powdered substance to be contained within the capsule is placed into each half of the capsule.

64. The method according to Claim 63, wherein each half of the capsule is filled to about 90% of its volume with the powdered substance.

65. The method according to Claim 62, wherein the step of placing a membrane into each half of the capsule further comprises placing each membrane such that it tensions against an inner wall of the capsule half thereby retaining the substance within the capsule half.

66. The method according to Claim 62, wherein the capsule further contains a liquid substance, the method further comprising, prior to placing the powdered substance into the capsule halves:

a) placing the liquid substance into at least one capsule half; and

b) placing a membrane into the at least one capsule half, such that the liquid substance is retained within the capsule by the membrane; and

c) placing the portion of the powdered substance, to be contained in the capsule half containing the liquid substance, on top of the membrane covering the liquid substance.

67. The method according to Claim 66, wherein the step of placing the liquid substance into at least one capsule half further comprises placing a portion of the liquid substance into each half of the capsule; placing a membrane atop each liquid portion; and placing a portion of the powdered substance on top of each membrane covering the liquid substance.

68. The method according to Claim 62, wherein the step of sealingly attaching the capsule halves to one

another comprises welding the two halves to one another using ultra-sound.

69. The method according to Claim 62, wherein the step of sealingly attaching the capsule halves to one another comprises gluing the two halves to one another.

70. The method according to Claim 62, wherein the step of sealingly attaching the capsule halves to one another comprises placing solvent along the seam where the two halves are joined.

71. The method according to Claim 62, wherein the two capsule halves include flanges that may be snapped into one another and the step of sealingly attaching the capsule halves to one another comprises snapping the two halves together.

72. The method according to Claim 71, further comprising adding a sealing substance, selected from the group consisting of glue and solvent, to the seam where the two halves are joined, after the two halves are snapped together.

73. A method of assembling a projectile system comprising a capsule containing a powdered substance occupying more than 50% of the space within the capsule, the capsule comprising two about equal halves, the method comprising the steps of:

a) placing into each half of the capsule a portion of the powdered substance, such that all of the powdered substance is in both halves of the capsule;

b) compressing the powdered substance within each half of the capsule, such that the powdered

substance is at least temporarily retained within the capsule half during movement of the capsule half; and

c) sealingly attaching the capsule halves to one another, such that the powdered substance is contained therein.

74. The method according to Claim 73, wherein the fully assembled capsule includes a weighting substance and wherein the method further comprises placing the weighting substance into at least one half of the capsule prior to placing the powdered substance therein.

75. The method according to Claim 73, wherein the step of compressing the powdered substance comprises compressing the powdered substance with a mandrel.

76. The method according to Claim 73, wherein the step of compressing the powdered substance comprises compressing the powdered substance with a finger.

77. The method according to Claim 73, further comprising the step of blowing the seam of the two halves to remove excess powder following attachment of the halves to one another.

78. The method according to Claim 73, wherein the step of sealingly attaching the capsule halves to one another comprises placing solvent along the seam where the two halves are joined.

79. A method of assembling a projectile system comprising a spherical capsule having two about equal halves, wherein the halves have complimentary flanges such that they may be securely snapped together and

wherein the capsule of the projectile system contains a powdered substance, the method comprising:

a) loosely placing into each half of the capsule a portion of the powdered substance to be contained in the capsule, such that all of the substance is in both halves of the capsule;

b) compressing the powdered substance in each half of the capsule, such that the powdered substance is, at least temporarily, retained in the capsule half during movement of the capsule half;

c) rotating the capsule halves towards one another, such that the complimentary flanges are aligned; and

d) securely snapping the two capsule halves together.

80. The method according to Claim 79, wherein the step of loosely placing a portion of the substance into each capsule half further comprises filling each half to its brim with the powdered substance.

81. The method according to Claim 79, further comprising removing excess powdered substance from the capsule after the two capsule halves have been securely snapped together.

82. The method according to Claim 79, further comprising applying glue on the seam of the capsule following assembly thereof.

83. The method according to Claim 82, wherein the step of applying glue on the seam of the capsule comprises applying a low viscosity glue to the seam such that the glue covers the seam by capillary action.

84. The method according to Claim 79, further comprising shaking the capsule, after assembly thereof, such that the compressed powdered substance contained therein is loosened.

85. A method of non-lethally inhibiting a living target using a projectile system comprising a capsule containing a substance, the method comprising:

a) impacting the target with the capsule, such that the capsule ruptures;

b) radially dispersing the substance from the capsule on and about the target; and

c) contacting the target with the dispersing substance, such that the target is inhibited thereby.

86. The method according to Claim 85, wherein the step of impacting the target with the capsule comprises contacting the anterior region of the target's torso.

87. The method according to Claim 85, wherein the step of contacting the target with the dispersing substance comprises contacting the target's face with the substance.

88. The method according to Claim 87, wherein the step of contacting the target's face comprises contacting at least one of the target's eyes, nose, mouth and throat.

89. The method according to Claim 85, wherein the step of contacting the target with the dispersing substance comprises dispersing the substance toward the target's face such that the target inhales the substance.

90. The method according to Claim 85, wherein the step of impacting the target with the capsule further comprises marking the target by impacting the target with sufficient force to bruise the target.

91. A method of non-lethally inhibiting a living target by firing, at the target, a projectile system comprising a capsule containing a substance, the method comprising impacting the target's torso with a plurality of capsules, wherein, upon impact with the target, the capsules rupture and disperse their contents about the target and wherein the capsules are impacted with the target in a vertical direction from the superior region of the target's torso down to the inferior region of the target's torso, such that the target hunches forward into the substance dispersing from the capsules.

92. A method of inhibiting a living target by firing, at the target, a projectile system comprising a capsule containing a substance, the method comprising impacting the target's torso with a plurality of capsules, wherein, upon impact with the target, the capsules rupture and disperse their contents about the target and wherein the capsules are impacted with the target in a vertical direction from the inferior region of the target's torso up towards the superior region of the target's torso.

93. The method of inhibiting a living target according to Claim 92, further comprising impacting the target's head with at least one capsule.

94. A method of non-lethally inhibiting a living target by firing, at an object in proximity to the target, a projectile system comprising a capsule

containing a substance, the method comprising impacting the object in proximity to the target with a plurality of capsules, wherein, upon impact with the object, the capsules rupture and disperse their contents about the target, such that the dispensing substance contacts the target's face region.

95. A method of non-lethally inhibiting a living target located behind a glass-like barrier, the method comprising:

a) impacting the glass-like barrier with a projectile system comprising a frangible capsule, such that the capsule both fractures the glass-like barrier and ruptures;

b) repeating step (a) as necessary to result in a hole in the glass-like barrier through which additional projectile systems can be fired without rupture of the capsules;

c) firing at least one frangible capsule through the glass-like barrier, which frangible capsule comprises an inhibiting substance; and

d) impacting the frangible capsule with an object in proximity to the target, such that the frangible capsule ruptures and disperses the inhibiting substance about the target.

96. The method according to Claim 95, wherein the step of impacting the glass-like barrier with a frangible capsule comprises impacting the glass-like barrier with a frangible capsule containing a substance selected from the group consisting of solid substances and particulate substances, such that the substance facilitates fracture of the glass-like barrier.

97. A system comprising:

a) a spherical capsule to be impacted with a target, wherein, upon impact with the target, the capsule ruptures;

b) a substance, contained within the capsule, wherein the substance comprises a powder; and

c) means for launching the spherical capsule at the target.

98. The system of Claim 97, wherein the means for launching the spherical capsule at the target is selected from the group consisting of a compressed gas paint ball launcher and a custom launcher.

99. The system of Claim 97, wherein the means for launching the spherical capsule is a shotgun and wherein the system further comprises a shotgun shell within which the spherical capsule is housed together with protective wadding.

100. The system of Claim 99, wherein three spherical capsules are housed within the shotgun shell and wherein diaphragms are located in-between the capsules.

Add #1